UM0273
User manual

VT5365 wireless reference design mouse with parallel battery

Introduction

This user manual, along with the VT5365 datasheet will enable you to evaluate the STV-365-R03 single-chip wireless reference design mouse and assist you in the design of your own VT5365 wireless mouse. If you have any questions, support can be obtained through the normal regional sales/support groups.

Kit contents

- Reference design mouse, plus receiver
- 5 x VT5365V032 optical mouse sensor
- 3 x Lens/Aperture - see *Section 3*
- 5 x LED
- USB cable/connector

1 Hardware

1.1 27MHz Wireless mouse schematics

Figure 1. Wireless mouse - VT5365 sensor

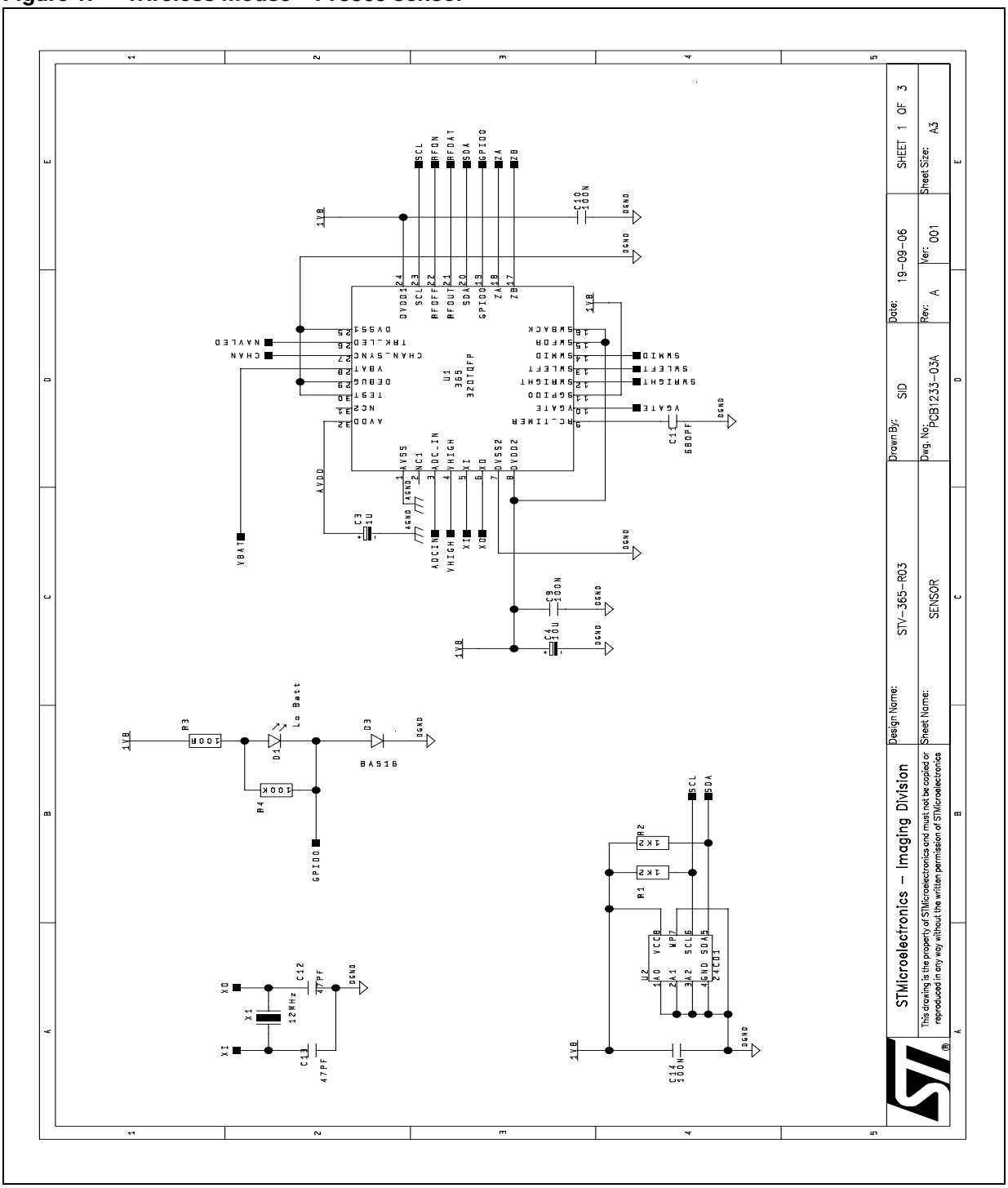


Figure 2. Wireless mouse - Switches, ZWheel, LED and PSU

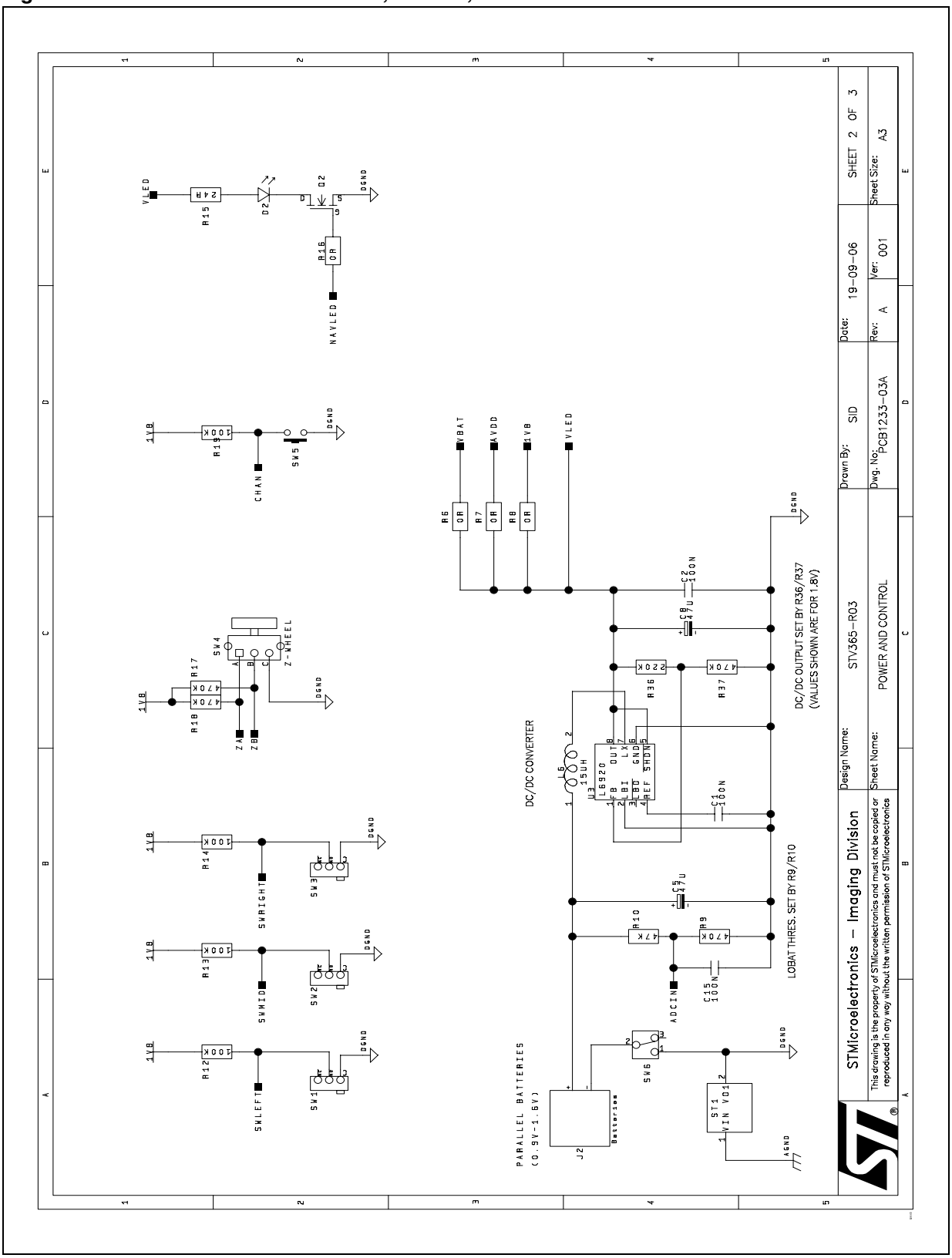
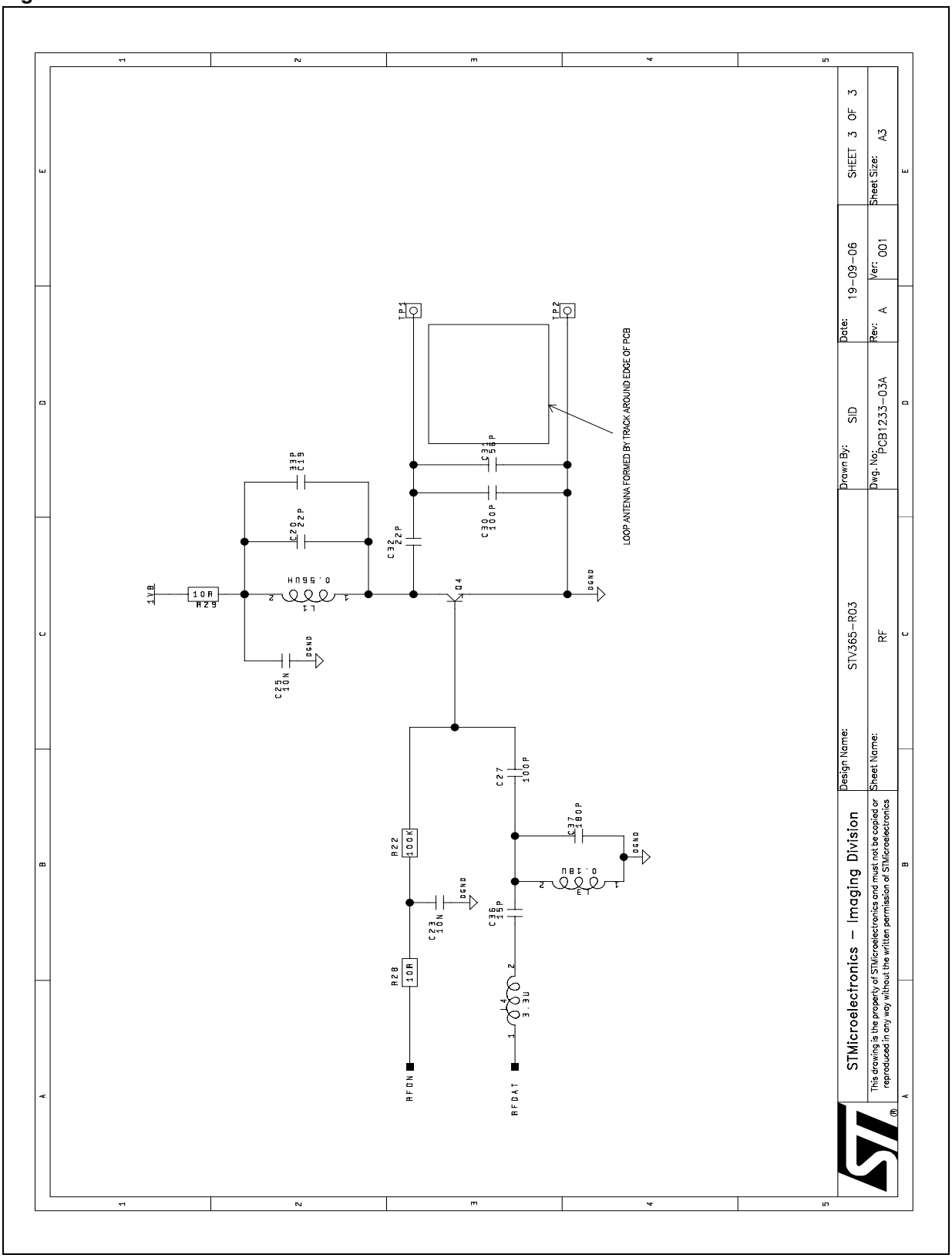
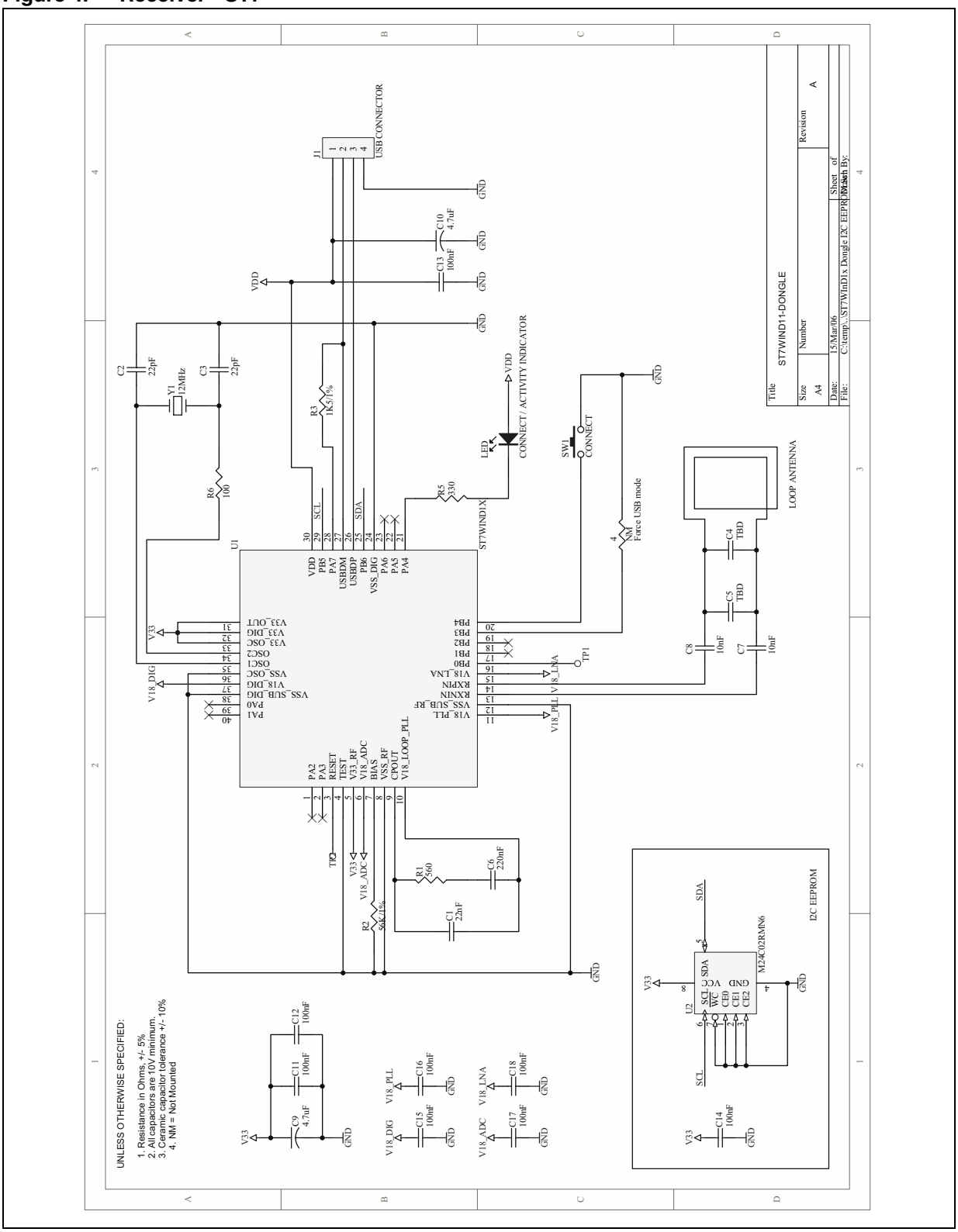


Figure 3. Wireless mouse - RF



1.2 Receiver schematic

Figure 4. Receiver - ST7



2 Bill of materials - Mouse

Table 1. Bill of materials - Mouse

Ref.	Description	Manufacturer	Part Number
U1	Optical mouse sensor	STMicroelectronics	VT5365V032
U2	1K Byte EEPROM	STMicroelectronics	M24C01-WBN6P
U3	Step up converter L6920	STMicroelectronics	E-L6920D
Q2	BSS138 N-channel MOSFET, SOT23	Farnell	518-621
Q4	MMBT3904 NPN Transistor, SOT23	Farnell	742-960
D1	Low current 3mm red LED	Standard component - many suppliers	
D2	5mm IR navigation LED	Agilent	HSDL-4261
D3	Single Diode (SMD) BAS 16	Standard component - many suppliers	
X1	12MHz HC49/S Crystal	Standard component - many suppliers	
L1	0.56uH Axial lead RF inductor T/H 10mm pitch	Farnell	512-448
L3	0.18uH Axial lead inductor T/H 10mm pitch	Farnell	512-345
L4	3.3uH Axial lead inductor T/H 10mm pitch	Farnell	513-404
L6	15uH Surface Mount Inductor DO1608 serie	Coilcraft	D01608C-15
SW1,SW2,SW3	Miniature microswitch, left, middle, right buttons	Standard component - many suppliers	
SW4	Mechanical encoder (Zwheel)	ALPS	EC10E series
SW5	Sealed Keyswitch (SMD) B3S1000, ID button	Standard component - many supplier	
SW6	Subminiature PCB mounted slide switch, SPDT vertical 2.54mm pitch	Standard component - many suppliers	
R6,R7,R8,R16	0R Resistor	Standard component - many suppliers	
R28,R29	10R Resistor	Standard component - many suppliers	
R15	33R Resistor	Standard component - many suppliers	
R3	100R Resistor	Standard component - many suppliers	
R1,R2	1K2 Resistor	Standard component - many suppliers	
R10	47K Resistor	Standard component - many suppliers	
R4,R12,R13, R14,R19,R22	100K Resistor	Standard component - many suppliers	
R36	220K Resistor	Standard component - many suppliers	
R9,R17,R18, R37	470K Resistor	Standard component - many suppliers	
C36	15pF Capacitor	Standard component - many suppliers	
C20,C32	22pF Capacitor	Standard component - many suppliers	
C19	33pF Capacitor	Standard component - many suppliers	
C12,C13	47pF Capacitor	Standard component - many suppliers	

Table 1. Bill of materials - Mouse (continued)

Ref.	Description	Manufacturer	Part Number
C31	56pF Capacitor	Standard component - many suppliers	
C27,C30	100pF Capacitor	Standard component - many suppliers	
C37	180pF Capacitor	Standard component - many suppliers	
C11	680pF Capacitor	Standard component - many suppliers	
C23,C25	10nF Capacitor	Standard component - many suppliers	
C1,C2,C9,C10, C14,C15	100nF Capacitor	Standard component - many suppliers	
C3	1uF Tantalum capacitor CASE B	Standard component - many suppliers	
C4	10uF Tantalum capacitor CASE B	Standard component - many suppliers	
C5,C8	47uF Tantalum capacitor CASE B	Standard component - many suppliers	
Additional items not mounted on the PCB			
	Optics assembly	See *Section 3: Optics*	
	Aperture	See *Section 3: Optics*	

2.1 Bill of materials - Receiver

Table 2. Bill of materials - Receiver

Reference	Description	Manufacturer	Part number
R1	560R Resistor (5%)	Standard component - many suppliers	
R2	56K Resistor (1%)	Standard component - many suppliers	
R3	1K5 Resistor (1%)	Standard component - many suppliers	
R5	330R Resistor (5%)	Standard component - many suppliers	
R6	100R Resistor (5%)	Standard component - many suppliers	
C1	22nF Ceramic Capacitor (10%)	Standard component - many suppliers	
C2,C3	22pF Ceramic Capacitor (5%)	Standard component - many suppliers	
C4	47pF Ceramic Capacitor (5%)	Standard component - many suppliers	
C6	220nF Ceramic Capacitor (10%)	Standard component - many suppliers	
C7,C8	10nF Ceramic Capacitor (10%)	Standard component - many suppliers	
C9,C10	4.7uF Ceramic Capacitor (10%)	Standard component - many suppliers	
C1,C12,C13, C14,C15,C16, C17,C18	100nF Ceramic Capitor (10%)	Standard component - many suppliers	
LD1	Green LED	Standard component - many suppliers	
Y1	Quartz 12MHz 60ppm	Standard component - many suppliers	
U1	ST7WinD11 Microcontroller	STMicroelectronics	ST7WIND11NSY(1)
U2	M24C02 EEPROM	STMicroelectroonics	M24C02-RMN6
SW1	SMD Push Button	Standard component - many suppliers	
J1	USB connector	Standard component - many suppliers	
R4,C5	Not fitted		

1. To order ST7 device, please contact STMicroelectronics.

3 Optics

3.1 Manufacturers

STMicroelectronics has worked with optical component suppliers to produce a single piece light guide with integrated lens. The kit contains 3 pieces. For more information please contact the indivual supplier.

MaxEmil Photonics Corporation
7F, 135, Lane 235,
Bao Chiao Road,
Hsintien City,
Taipei, Taiwan
Tel: 886-2-89191179
Fax: 886-2-89191178
http://www.maxemil.com.tw

3.2 Drawings

Note: Optics footprint in the base is available in IGES format

Figure 5. Exploded view

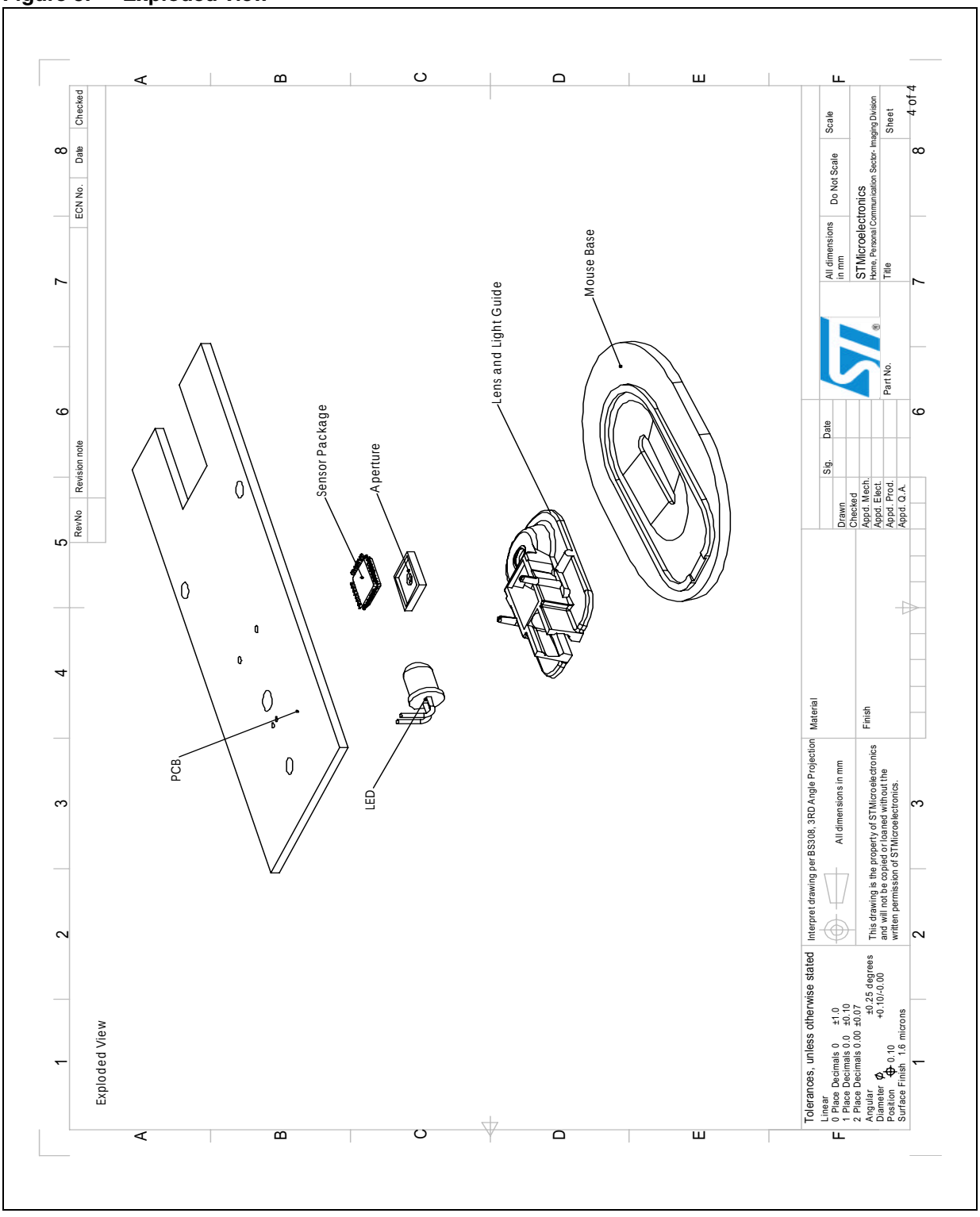


Figure 6. MaxEmil optics

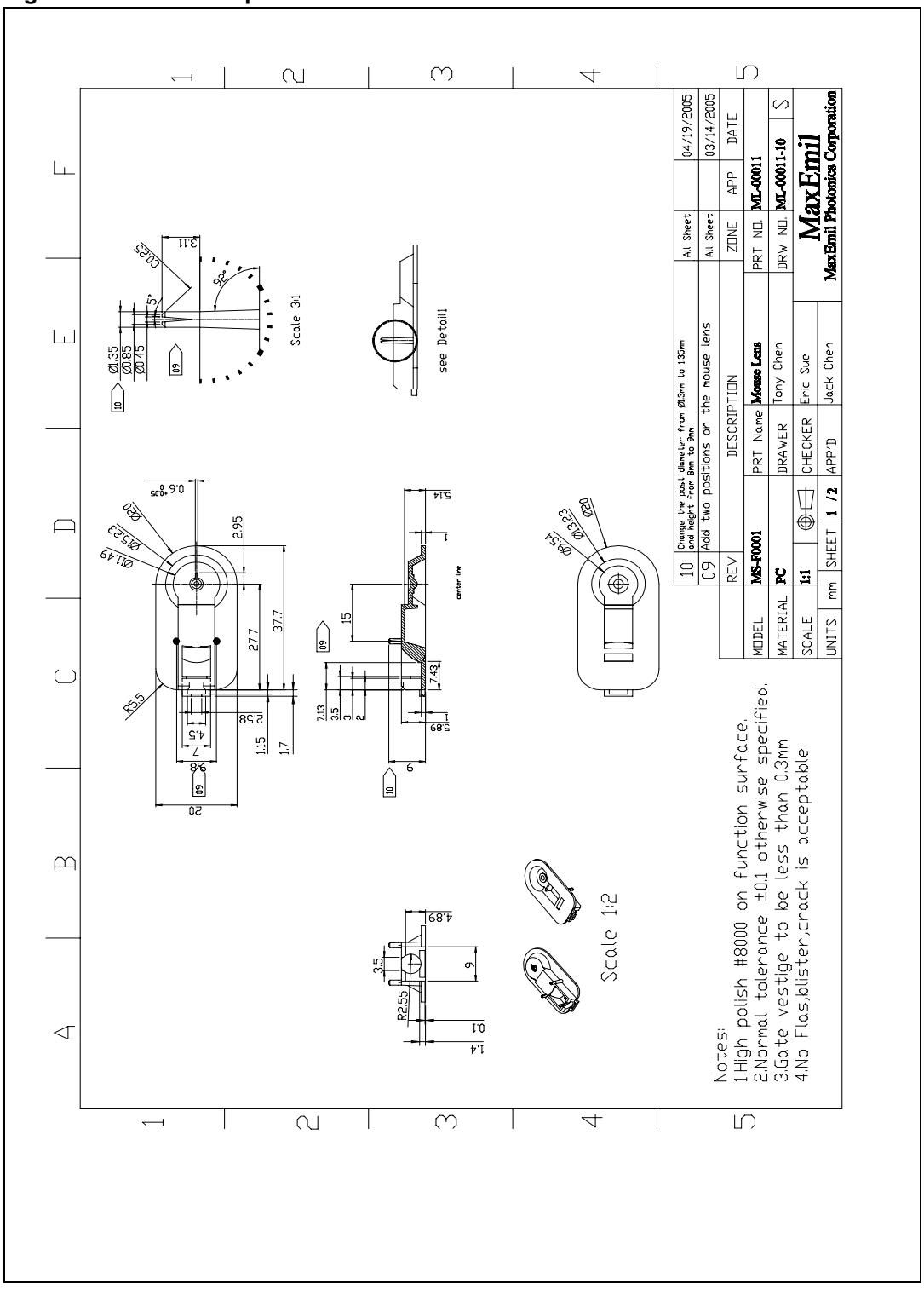


Figure 7. MaxEmil aperture

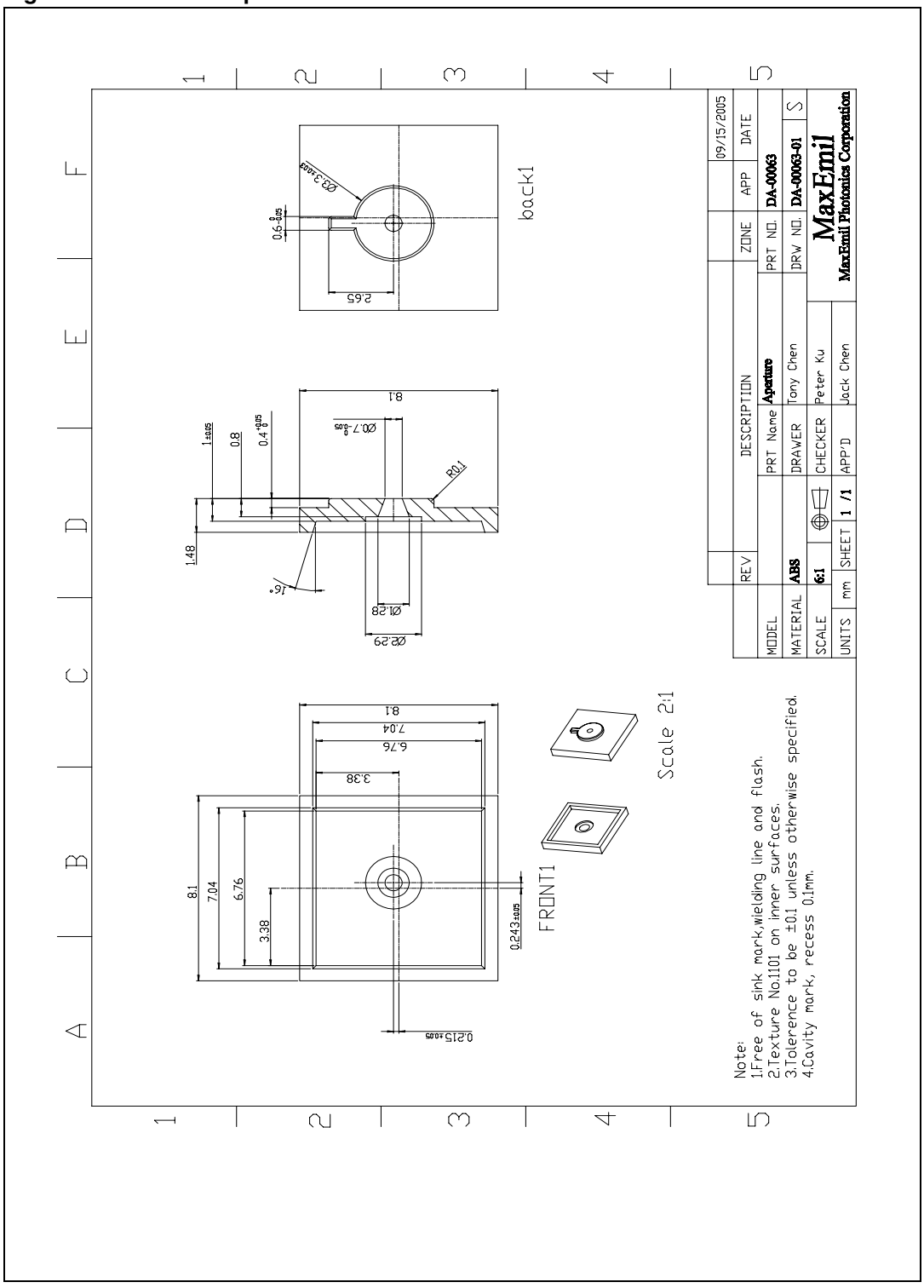


Figure 8. Cross section

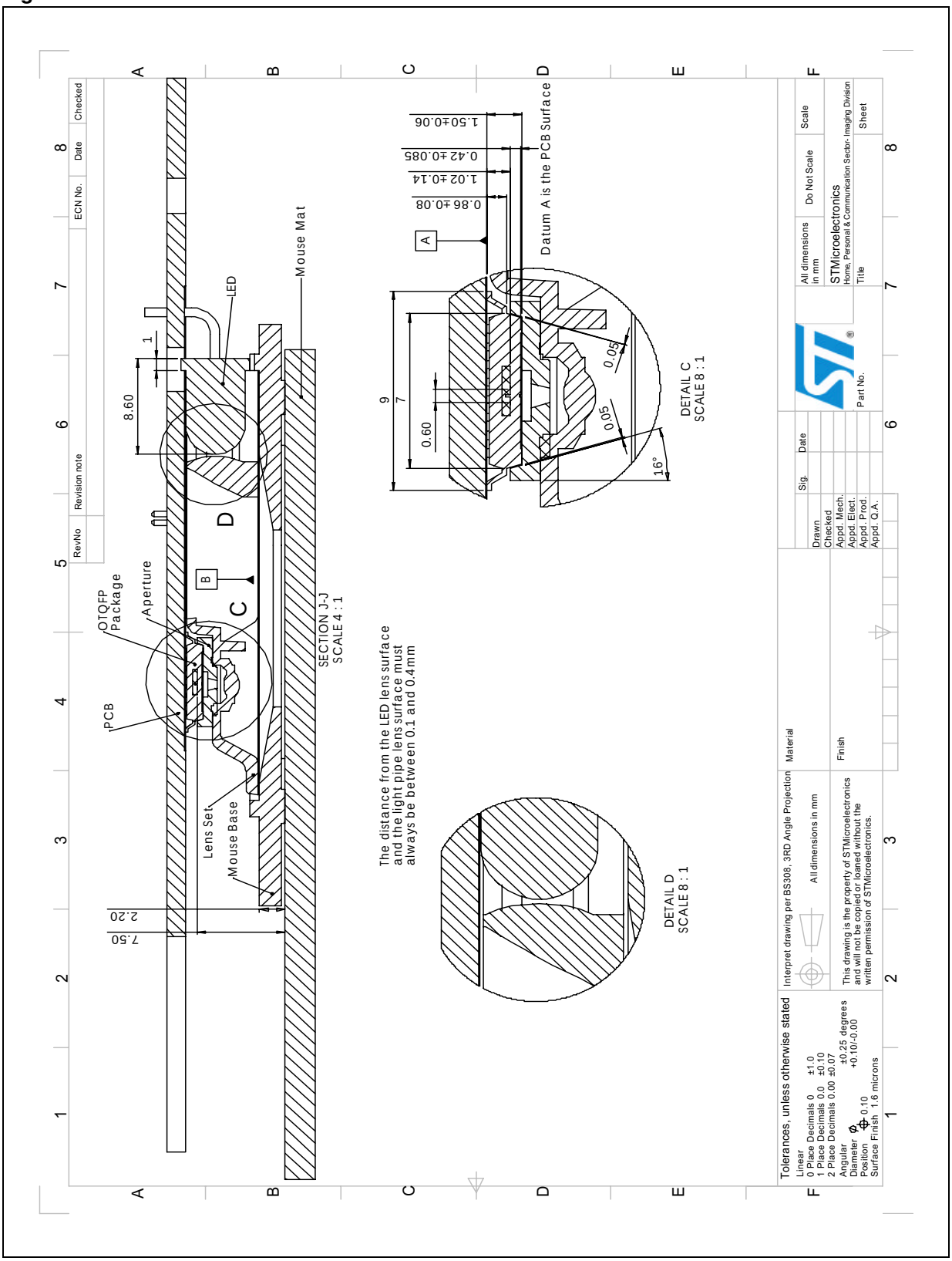
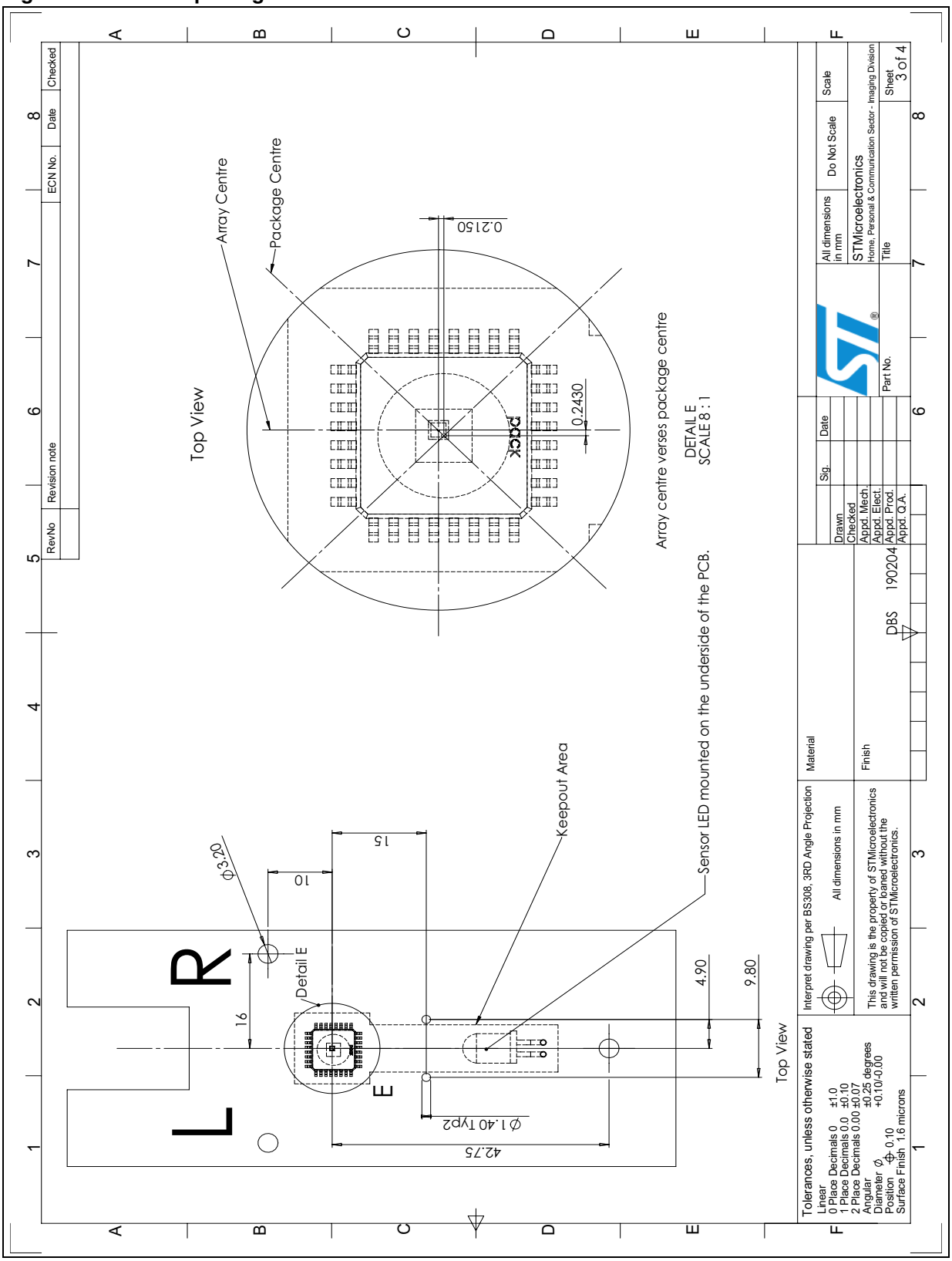


Figure 9. Sensor package



4 General

How to use the VT5365

1. Turn the mouse on using the sliding switch located on the bottom of the mouse.
2. Connect the receiver to the PC via the USB cable/connector provided, the LED (LD1) will light.
3. Press the connect button on the receiver (SW1) and the LED will start to flash. It will flash on/off for about 15 seconds, during this time press the connect button on the bottom of the mouse. The mouse will now be connected, the LED will go off and only light while data is being transmitted.

Figure 10. Connect and power

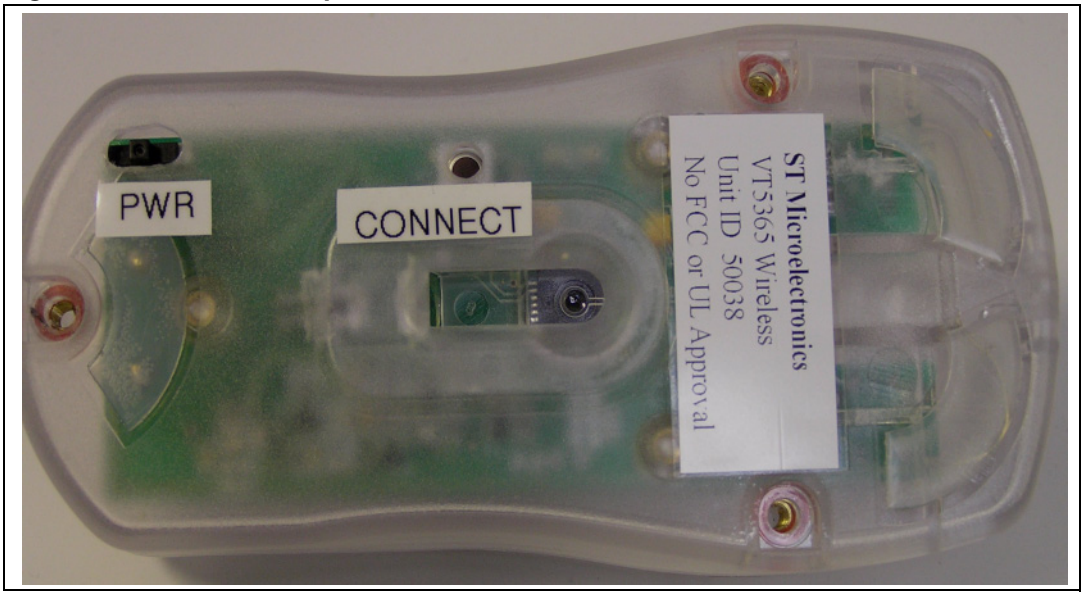
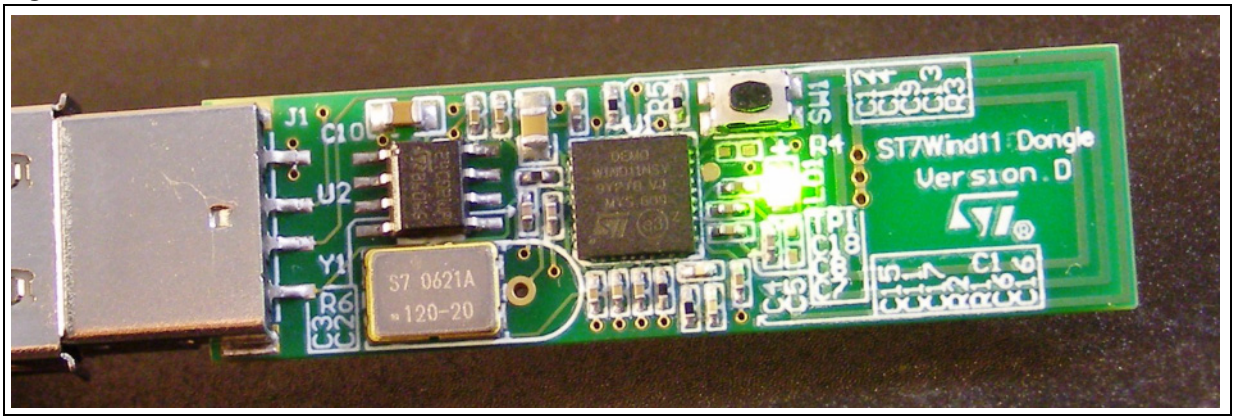


Figure 11. ST7 receiver



5 Revision history

Table 3. Document revision history

Date	Revision	Changes
14-Mar-2007	1	Initial release published as a revision 0.3.
25-Apr-2007	2	No change in the document content. Only corrected the document revision number.

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